

5 **Apparatus for transferring poultry carcasses**

FIELD OF THE INVENTION

10 The invention relates to an apparatus for transferring poultry carcasses from a first overhead conveyor to a second overhead conveyor.

BACKGROUND OF THE INVENTION

Such transfer apparatuses are among others known from European patent application 0.259.920 and from US patents 5.453.045 and 5.672.098, the contents of which being included in this text by reference.

The poultry, chicken or turkeys, hanging upside down from their legs or knees in hangers are transferred here from the one overhead conveyor, for instance a cooling line, by means of one or more transfer wheels to a subsequent overhead conveyor, for instance a drip conveyor. Both conveyors can be situated in line with each other, but also at an angle, for instance 90 degrees.

It is of importance here which rotation direction both overhead conveyors have with respect to each other. Depending on that an even or odd number of transfer wheels have to be deployed.

When the rotation direction is opposite, an odd number of transfer wheels is necessary, the orientation of the carcasses with respect to the line remaining the same. In case of a same rotation direction an even number is necessary, the orientation of the carcasses with respect to the line being reversed. In each case there is question of a central transfer wheel and one or several transfer wheels placed between the central transfer wheel and one or both conveyors, for correction of the rotation direction of the carcasses and/or for synchronisation.

30 For the slaughter process the orientation of the carcass is of importance.

For the one treatment it is for instance necessary that the carcass is transported with the breast forward through the processing station in question, for another treatment an orientation with the breast to the outside is desirable.

Usually hangers are used the orientation of which with respect to the process path or conveyor is fixed. There are hangers available that are provided with means for rotating the hanger with respect to the trolley in question moving past the conveyor to which trolley the hanger is attached. Such hangers, however, require an additional investment, and moreover are not always suitable to be accommodated in an existing slaughter line.

### SUMMARY OF THE INVENTION

It is an object of the invention to provide a provision with which also with the usual "fixed" hangers or leg shackles the orientation of the carcass can be changed, in particular near the transition from the one overhead conveyor to the next overhead conveyor.

From one aspect the invention to that end provides an apparatus for transferring poultry carcasses from a first overhead conveyor to a second overhead conveyor, in which overhead conveyors the carcasses are transported suspended from shackles and the like, comprising a transfer wheel rotatable about a vertical axis and positioned between both overhead conveyors, which wheel is provided with holders for the carcasses and with first means for transferring the carcasses from the first overhead conveyor to the transfer wheel and with second means for transferring the carcasses from the transfer wheel to the second overhead conveyor, orientation means further being present for equalizing the spacial initial orientation of the carcass in the holder at receipt on the transfer wheel and the spacial final orientation of the carcass in the holder at its discharge from the transfer wheel to the second overhead conveyor. In this way it is achieved that the absolute orientation of the carcass during transfer by the transfer wheel can stay unaltered, but that also the orientation with

carcass can be discharged from the holder in a direction which is the same as the direction of insertion of the carcass into the holder. As a result rotation of the holder can be dispensed with under conditions.

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Preferably the distance between the accommodation spaces at their one end is different from the distance therebetween at their other end. In this way in a transfer wheel with such holders a fluent, and possibly direct accommodation/transfer of the carcasses becomes possible in case the distance between the legs in the hangers of the first overhead conveyor is different from the one of the hangers of the second overhead conveyor.

The invention further provides an apparatus of the aforementioned type, provided with such holders.

The invention further provides a method as described in this application.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be elucidated on the basis of the exemplary embodiment shown in the attached drawings, in which:

Figure 1 A schematically shows a top view of transfer apparatus according to the invention, placed between two overhead conveyors;

Figure 1 B schematically shows a top view of a transfer apparatus according to the invention, placed between two overhead conveyors, in alternative arrangement;

Figure 2 shows a top view of a transfer wheel of an apparatus according to the invention;

Figure 3 shows a top view inclined from above of a part of the transfer wheel of figure 2;

Figure 4 shows a side view of the transfer wheel of the figures 2 and 3;

Figure 5 schematically shows a vertical cross-section of the arrangement of the transfer wheel according to the figures 2-4;

Figure 6A schematically shows a vertical cross-section of a first holder for the transfer wheel of the preceding figures;

Figures 6B schematically shows a vertical cross-section of a second holder for the transfer wheel according to figures 2-5; and

Figures 7A and 7B show a front view and a top view, respectively, of the hanging part of a holder for an apparatus according to the invention.

#### DETAILED DESCRIPTION

In figure 1A a transfer apparatus 1 is shown, by means of which carcasses, supplied on a first overhead conveyor 2, for instance a cooling conveyor, are supplied in the direction A, suspended from hangers 8 on a transport line, such as a rail and/or a chain 3. The overhead conveyor 2 is turned about rotation wheel 4, the carcasses being transferred from the overhead conveyor 2 onto transfer wheel 12 of the transfer apparatus 10 at the location of transfer station 40. At the downstream side of the transfer apparatus 10 a second overhead conveyor 5 is placed, for instance a drip conveyor, having a transport line 6 and a rotation wheel 7, along which the holders 9 transported with the transport line 6 are moved in the direction C, past transfer station 50, where the carcasses from the transfer apparatus 10 are received.

The transfer apparatus 10 here is substantially shown with a rotation axis 13 and a transfer wheel 12, on which the carcass holders 11 are supported to rotate along in the direction B.

Other arrangements are conceivable, such as shown in figure 1B, wherein

manner, a chain 27 running around the chain wheels 6 and 18, as can be seen in figure 5. A chain tensioner 19 (also see figure 2) is provided here for keeping the chain 17 at the right tension. The chain transfer 15 with chain wheel 16 and chain 17, and also chain tensioner 19, are shielded to the outside and upwards by means of a hood 26, as can also be seen in figure 3.

Below the chain wheel 16 a toothed wheel 24a is attached to the axis 20a in an also rotatably fixed manner. Said toothed wheel 24a is meshed with a toothing 25a at the circumference of a large central toothed wheel 25 (also see figure 3), which central toothed wheel 25 is coaxial with and freely rotatable with respect to the axis 13.

The other holders 11b are substantially equal to the holder 11a, but they are not provided with a chain wheel 16. They are also meshed with the teeth of their toothed wheel 24b with the toothing 25a of the central toothed wheel 25.

In this example the toothed wheels 24a, 24b have twenty-nine teeth, with a diameter of the pitch circle of 116 mm, and the central toothed wheel 25 has one hundred and seventy-six teeth, with a diameter of the pitch circle of 704 mm.

When the disc 14 and thus the axis 13 is rotated in the direction B, the transfer wheel 12 will also rotate along. In that way also the holders 11a, 11b are taken along in rotation. As a result the chain wheel 16 is taken along as well, by the holder 11 a. Because the chain wheel 16 is connected to the chain wheel 18 via chain [wheel] 17, and said chain wheel 18 does not rotate along, the chain wheel 16 will counter rotate in the direction D (also see figure 1A). Because the diameters of the chain wheels 16 and 18 are equal, the spacial orientation of the holder 11a will not change during rotation of the transfer wheel 12.